

ABSTRACT

The series resistance of a CPP GMR stack can be reduced by shaping it into a small upper, on a somewhat larger, lower part. Because of the sub-micron dimensions involved, good alignment between these is normally difficult to achieve. The present invention discloses a self-alignment process based on first laying down a mask that will determine the shape of the top part. Ion beam etching is then initiated, the ion beam being initially applied from one side only at an angle to the surface normal. During etching, all material on the near side of the mask gets etched but, on the far side, only material that is outside the mask's shadow gets removed so, depending on the beam's angle, the size of the lower part is controlled and the upper part is precisely centrally aligned above it.